UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/477,354	06/07/95	HAWLEY-NELSON	P 32-95

EXAMINER
BRUSCA, J

18N2/0429

GREENLEE AND WINNER
5370 MANHATTAN CIRCLE
SUITE 201
BOULDER CO 80303

ART UNIT	PAPER NUMBER
1805	

DATE MAILED: 04/29/96

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 08/477,354	Applicant(s) Hawley-Nelson et al.
	Examiner John S. Brusca	Group Art Unit 1805

☐ Responsive to communication(s) filed on _____ .

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-56* is/are pending in the application.

Of the above, claim(s) *37-56* is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-36* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☒ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 8

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

1. Restriction to one of the following inventions is required under 35 U.S.C. § 121:

I. Claims 1-36, drawn to a composition for transfecting a eukaryotic cell, classified in Class 428, subclass 402.2.

II. Claims 37-56, drawn to a method of transfecting a cell, classified in Class 435, subclass 240.1.

2. Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (M.P.E.P. § 806.05(h)). In the instant case the process of transfecting a eukaryotic cell may be performed by liposomes comprising cationic lipids and DNA that do not contain peptides.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their separate classification and their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 C.F.R. § 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a diligently-filed petition under 37 C.F.R. § 1.48(b) and by the fee required under 37 C.F.R. § 1.17(h).

5. During a telephone conversation with Donna Ferber on 3/25/96 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-36. Affirmation of this election must be made by applicant in responding to this Office action. Claims 37-56 are withdrawn from further consideration by the Examiner, 37 C.F.R. § 1.142(b), as being drawn to a non-elected invention.

6. The disclosure is objected to because of the following informalities:

A gap exists in the text between pages 22 and 23 of the specification. The Applicants should submit an amended page or pages to insure that all of the specification is entered in the instant application. Appropriate correction is required.

7. Claims 1-36 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-17 are indefinite for recitation of the phrase "capable of". It is not clear if the claims are drawn to a latent property or a property which requires some additional agent for activity. The objection would be overcome if claims 1, 15, 16, and 17 were amended to describe distinctly the claimed property of the composition in positive language.

Claims 2-10 and 18-36 are indefinite for recitation of the phrase "said peptide" which lacks antecedent basis.

Claims 4-7 are indefinite for recitation of the phrase "said viral fusagenic protein" which lacks antecedent basis.

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-7, 13, and 14 are rejected under 35 U.S.C. § 102(b) as being anticipated by Kamata et al.

Claim 1 is drawn to a composition for transfecting a eukaryotic cell which comprises a peptide-nucleic acid complex and a cationic lipid that aggregates said peptide-nucleic acid complex. Claim 2 is drawn to the composition of claim 1 further limited to a peptide-nucleic acid complex comprising a fusagenic peptide or a peptide comprising a nuclear localization signal sequence. Claim 3 is drawn to the composition of claim 2 further limited to a fusagenic peptide derived from a viral fusagenic protein. Claim 4 is drawn to the composition of claim 3 further limited to a viral fusagenic peptide derived from a viral fusagenic protein selected from the group consisting of an influenza virus, a vesicular stomatitis virus, and an alphavirus. Claim 5 is drawn to the composition of claim 3 further limited to a fusagenic peptide derived from a hemagglutinin of an influenza virus or a glycoprotein of a vesicular stomatitis virus. Claim 6 is drawn to the composition of claim 5 further limited to a fusagenic peptide which is an amphiphilic peptide derived from a hemagglutinin of an influenza virus. Claim 7 is drawn to the composition of claim 6 further limited to an amphiphilic peptide consisting of a K5 or an E5 peptide of a hemagglutinin.

Claim 13 is drawn to the composition of claim 1 further comprising a neutral lipid. Claim 14 is drawn to the composition of claim 13 further limited to a neutral lipid consisting of dioleoylphosphatidylethanolamine.

Kamata et al. show transfection of eukaryotic cell lines COS-7, HeLa, and LTK$^-$ with DNA complexed with E5 and/or K5 peptides derived from hemagglutinitin and "LIPOFECTIN" comprising dioleoylphosphatidylethanolamine (a neutral lipid) and N-[1-(2,3-dioleyloxy)propyl]-N,N,N-trimethylammonium chloride (a cationic lipid). The complex forms a liposome that transfects the exemplified eukaryotic cells with DNA, allowing expression of a transfected beta-galactosidase gene, as shown in Figure 1 and Table 1, and a transfected neomycin resistance gene in Table II.

Therefore Kamata et al. anticipates the claimed invention.

10. The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
>
> Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103, the examiner presumes that the subject matter of the various

claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 C.F.R. § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of potential 35 U.S.C. § 102(f) or (g) prior art under 35 U.S.C. § 103.

11. Claims 11, 12, and 15-17 are rejected under 35 U.S.C. § 103 as being unpatentable over Kamata et al. in view of Life Technologies Catalog 1993-1994.

Claim 11 is drawn to the composition of claim 1 further limited to a cationic lipid consisting of a polyvalent cationic lipid. Claim 12 is drawn to the composition of claim 11 further limited to a polyvalent cationic lipid consisting of 2,3-dioleyloxy-N-[2(sperminecarboxamido)ethyl]-N,N-dimethyl-1-propanaminium trifluoroacetate (DOSPA). Claim 15 is drawn to the composition of claim 13 further limited to a composition that transfects DNA to an animal primary cell line. Claim 16 is drawn to the composition of claim 13 further limited to a composition that transfects DNA to a human primary cell line. Claim 17 is drawn to the composition of claim 13 further limited to a composition that transfects DNA to a fibroblast cell.

Kamata et al. show transfection of eukaryotic cell lines COS-7, HeLa, and LTK^- with DNA complexed with E5 and/or K5 peptides derived from hemagglutinitin and "LIPOFECTIN" comprising dioleoylphosphatidylethanolamine (a neutral lipid) and N-[1-(2,3-dioleyloxy)propyl]-N,N,N-trimethylammonium chloride (a cationic lipid). The complex forms a liposome that transfects the exemplified eukaryotic cells with DNA, allowing expression of a transfected beta-galactosidase gene, as shown in Figure 1 and Table 1, and a transfected

neomycin resistance gene in Table II. Kamata et al. does not show use of a polyvalent cationic lipid or transfection to a primary cell line or a fibroblast cell line.

Life Technologies Catalog 1993-1994 shows on page 9-19 a commercially available reagent "LIPOFECTAMINE". "LIPOFECTAMINE" comprises a neutral lipid and the cationic lipid DOSPA. Life Technologies Catalog 1993-1994 states that "LIPOFECTAMINE" may be used to transfect nucleic acids to fibroblasts, human primary cell cultures, and fibroblasts.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the lipid component of the composition of Kamata et al. to incorporate a polyvalent cationic lipid such as DOSPA because "LIPOFECTAMINE" comprises

DOSPA and a neutral lipid for the purpose of facilitating transfection of DNA to eukaryotic cells.

12. Claim 18 would be allowable if rewritten or amended to overcome the rejection under 35 U.S.C. 112.

13. Claims 8, 9, 10, and 19-36 would be allowable if rewritten to overcome the rejection under 35 U.S.C. 112 and to include all of the limitations of the base claim and any intervening claims.

14. Certain papers related to this application may be submitted to Art Unit 1805 by facsimile transmission. The FAX number is (703) 308-0294. The faxing of such papers must

conform with the notices published in the Official Gazette, 1156 OG 61 (November 16, 1993) and 1157 OG 94 (December 28, 1993) (see 37 CFR 1.6 (d)). NOTE: If applicant *does* submit a paper by FAX, the original copy should be retained by applicant or applicant's representative. NO DUPLICATE COPIES SHOULD BE SUBMITTED, so as to avoid the processing of duplicate papers in the Office.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John S. Brusca, Ph.D. whose telephone number is (703) 308-4231. The examiner can normally be reached on Monday through Friday from 9 AM to 5 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mindy Fleisher, Ph.D., can be reached at (703) 308-0407.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0196.

John S. Brusca, Ph.D.

Examiner

MINDY FLEISHER
SUPERVISORY PATENT EXAMINER
GROUP 1800